
Patrick Kiel

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EDUCATION

Ph.D. Marine Biology and Ecology, (January 2022 - current)

Rosenstiel School of Marine and Atmospheric Science, Miami, FL

- Advisors: Dr. Vivek Prakash, Dr. Ian Enochs, Dr. Prannoy Suraneni, Dr. Diego Lirman
- Topics: Ecological mechanics, biomineralization, and restoration of coral reefs

Bachelor of Science in Marine and Atmospheric Science, May 2020

University of Miami, Coral Gables, FL

- Majors: Marine Science and Biology
- Thesis: "Examining structural and mechanical properties of the threatened coral *Acropora cervicornis*: Effects of nursery grow-out platforms on mechanical strength"
- Study Abroad: UGalapagos - International Outreach Initiative, Galapagos Islands, Spring 2019

PROFESSIONAL EXPERIENCE

NOAA Research Assistant I

October 2020 - November 2021

AOML Coral Program

Supervisor: Dr. Ian Enochs, Nathan Formell

- Developed *Acropora cervicornis* Data Coordination Hub to assimilate genotype-specific datasets to identify resilient genotypes and inform restoration practitioners
- Designed processing code for automated incubation chambers designed to rapidly assess coral physiology and calcification
- Conducted carbonate budget surveys in support of the National Coral Reef Monitoring Program
- Supported diverse projects within the AOML Coral Program and Experimental Reef Laboratory investigating coral disease, ocean acidification, heterotrophy, and thermal tolerance

Undergraduate Research Assistant and Scientific Diver

September 2018 - May 2020

Lirman Benthic Ecology and Coral Restoration Lab, University of Miami

Supervisor: Dr. Diego Lirman, Jane V. Carrick

- Led independent research project investigating mechanical strength of coral skeletons and role of coral restoration to increase wave attenuation of degraded reefs to support coastal resilience
- Conducted field research as part of IBBEAM, AGGRA, and coral restoration projects
- Collaborated with diverse team of researchers and graduate students conducting research projects and ecological assessments of reefs and seagrass beds in South Florida

Undergraduate Research Assistant

August 2017 - May 2019

Langdon Ocean Acidification Lab, University of Miami

Supervisor: Dr. Chris Langdon

- Analyzed *Acropora cervicornis* under experimental ocean acidification conditions to determine effects on calcification rate, tissue lipid content, symbiont density, and chlorophyll-*a* concentration
- Maintained coral mesocosms and microcosms in forecasted high CO₂ reef conditions
- Collected and analyzed seawater samples of experimental aquariums

COMMUNITY OUTREACH

Coral Restoration Educator

May 2019 - present

Rescue a Reef, Miami, FL

- Taught citizen scientists coral restoration principles and techniques during field excursions

- Communicated economic and social value of coral reefs to the public in outreach events and lab tours

President

May 2019 - April 2020

University of Miami Scuba Club, Coral Gables, FL

- Organized twice-weekly dive trips, training courses, and managed gear procurement and maintenance for membership of 400+ students, faculty, and alumni.
- Worked closely with University officials to obtain \$60,000 in annual funding and ensured proper risk management and dive safety policies.
- Previously held roles: Dive Safety Officer (2016-2017), Treasurer (2017-2018), Vice President (2018-2019)

Divemaster and Science Educator

May 2017 - August 2018

Florida National High Adventure Sea Base, Boy Scouts of America, Islamorada, FL

- Guided divers between the ages of 14-18 around local reefs and instilled safe diving practices
- Revised seminar curriculum and taught local ecology, fish and coral identification to a public audience
- Additional responsibilities included dive equipment maintenance, boat handling, boat maintenance

SKILLS

Research Skills

- Analytical water chemistry (Spectrometric pH, DIC, Dissolved Oxygen, Nutrients, Total Alkalinity)
- Calibration, implementation, and analysis of coral reef monitoring instruments (tilt current meters, SeaBird EcoPAR and SeaFET sensors, Sub-surface Automated Samplers, HOBO pendant loggers)
- Maintenance of microcosms and mesocosms for long-term coral observations
- Incubations of corals to understand physiology and calcification

Software

- R, MySQL, Microsoft Office Suite, Adobe Creative Suite, Web Design (HTML, CSS, JavaScript), FlexScan 3-D Scanning, Agisoft Metashape, ArcGIS, CPCe, ImageJ

Diving and Marine Operations

- Scientific Diver, University of Miami (AAUS: 60ft, nitrox)
- MOCC Small Boat Operator
- Divemaster and Rescue Diver, Professional Association of Diving Instructors
- Rebreather/DPV/Trimix Cave Diver, Technical Diving International
- Professional First Aid/CPR/AED Certifications, Divers Alert Network/Red Cross
- Emergency Oxygen Provider, Divers Alert Network/Professional Association of Diving Instructors

FIELD EXPERIENCE

- Galapagos (2019), Florida (2018-2021), Dry Tortugas (2021)

AWARDS & RECOGNITIONS

- Dr. Linda Farmer Undergraduate Research Award, \$2,500
- University of Miami Eco Agency Programming Grant for Coral Restoration, \$1,500

PRESENTATIONS

- **Kiel PM**, Carrick JV, Ramanathan S, Suraneni P, Rhode-Barbarigos L, Lirman D (2020, April 7-11) Structural resilience of nursery-reared *Acropora cervicornis* - A comparison of grow-out platforms. 49th Benthic Ecology Meeting, Wilmington, NC. **Oral Presentation** *Canceled due to COVID-19
- **Kiel PM**, Carrick JV, Ramanathan S, Suraneni P, Rhode-Barbarigos L, Lirman D (2020, April 28) Examining structural and mechanical properties of the threatened coral *Acropora cervicornis*: Effects of nursery grow-out platforms on mechanical strength. 2020 Rosenstiel Undergraduate Research Symposium (RURS), Miami, FL. **Poster Presentation**